NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
SURFACE DRAINAGE
FIELD DITCH
(FT)
CODE 607

DEFINITION

A graded ditch for collecting excess water in a field.

SCOPE

This standard applies to drainage ditches installed to collect water from a field. It does not apply to surface drainage, main or lateral (608) or to grassed waterways or outlets (412).

PURPOSE

To drain surface depressions; collect or intercept excess surface water, such as sheet flow, from natural and graded land surfaces or channel flow from furrows and carry it to an outlet; and collect or intercept excess subsurface water and carry it to an outlet.

CONDITIONS WHERE PRACTICE APPLIES

Applicable sites are flat or nearly flat and;

1. Have soils that are slowly permeable (low permeability) or that are shallow over barriers, such as rock or clay, which hold or prevent ready percolation of water to a deep stratum.

2. Have surface depressions or barriers that trap rainfall.

3. Have insufficient land slope for ready movement of runoff across the surface.

4. Receive excess runoff or seepage from uplands.

5. Require the removal of excess irrigation water.

6. Require control of the water table.

7. Have adequate outlets available for disposal of drainage water by gravity flow or pumping.

WATER QUANTITY

Deep percolation or ground water recharge normally is not affected by this practice because of conditions under which this practice is applied. Runoff and interflow will be increased, but evaporation would be decreased by, the removal of ponded surface water. The water table in the drained field may be lowered.

WATER QUALITY

From erosive fields, this practice may increase the yields of sediment and sediment-attached substances to downstream water courses because of an increase in runoff. In other fields, the location of the ditches may cause a reduction in sheet and rill erosion and ephemeral gully erosion. Drainage of high salinity areas may raise salinity levels temporarily in receiving waters. Areas of soils with high salinity that are drained by the ditches may increase or receiving waters. Phosphorous loads, resulting from this practice may increase eutrophication problems in ponded receiving waters. Water temperature changes will probably not be significant. Upland wildlife habitat may be improved or increased although the habitat formed by standing water and wet areas may be decreased.

PLANNING CONSIDERATIONS FOR WATER QUANTITY AND QUALITY

Quantity

1. Effects on water budget components, especially relationships between runoff and infiltration.

2. The effect of changes in the water table on the rooting depth for anticipated land uses.

Quality

1. Downstream effects of erosion and yields of sediment and sediment-attached substances.

2. Effects on the salinity of the soil in the drained field.

3. Effects on the loadings of dissolved substances downstream.

4. Potential changes in downstream water temperature.

5. Effects on wetlands or other water-related wildlife habitat.

6. Effects on the visual quality of downstream water courses.

DESIGN CRITERIA

Drainage field ditches shall be planned as integral part of a drainage system for the field served and shall collect and intercept water and carry it to an outlet with continuity and without ponding.

Investigations

An adequate investigation shall be made of all sites.

Location

Ditches shall be established, insofar as topography and property boundaries permit, in straight or nearly straight courses. Random alinement may be used to follow depressions and isolated wet areas of irregular or undulating topography. Excessive cuts and the creation of small irregular fields shall be avoided.

On extensive areas of uniform topography, collection or interception ditches shall be installed as required for effective drainage.

Design

The size, depth, side slopes, and cross section area shall:

1. Be adequate to provide the required drainage for the site.

2. Permit free entry of water from adjacent land surfaces without causing excessive erosion.

3. Provide effective disposal or reuse of excess irrigation water (if applicable).

4. Conduct flow without causing excessive erosion.

5. Provide stable side slopes based on soil characteristics.

6. Permit crossing by field equipment if feasible.

7. Permit construction and maintenance with available equipment.

PLANS AND SPECIFICATIONS

Plans and specifications for constructing drainage field ditches shall be in keeping with this standard and shall

describe the requirements for properly installing the practice to achieve its intended purpose.

FIELD DITCH SPECIFICATIONS

The ditch shall be cut to the line and grade shown on the plans or as staked in the field.

Spoil placement

Spoil shall be spread and leveled so that the surface water can flow into the ditch. If the spoil is to be farmed, it shall be spread so that farming operations will not be hindered.

Maintenance

Provisions shall be made for maintaining the ditches and their outlets to permit effective drainage.